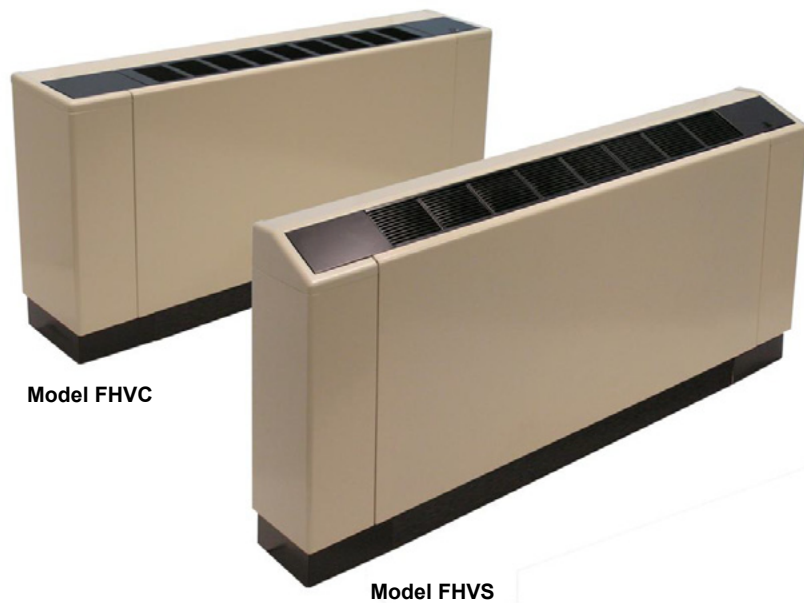




ThinLine™ 3G Vertical Unit Heaters

Catalog 723-1

Type FHVC, FHVH, FHVS, FHWC Vertical Design



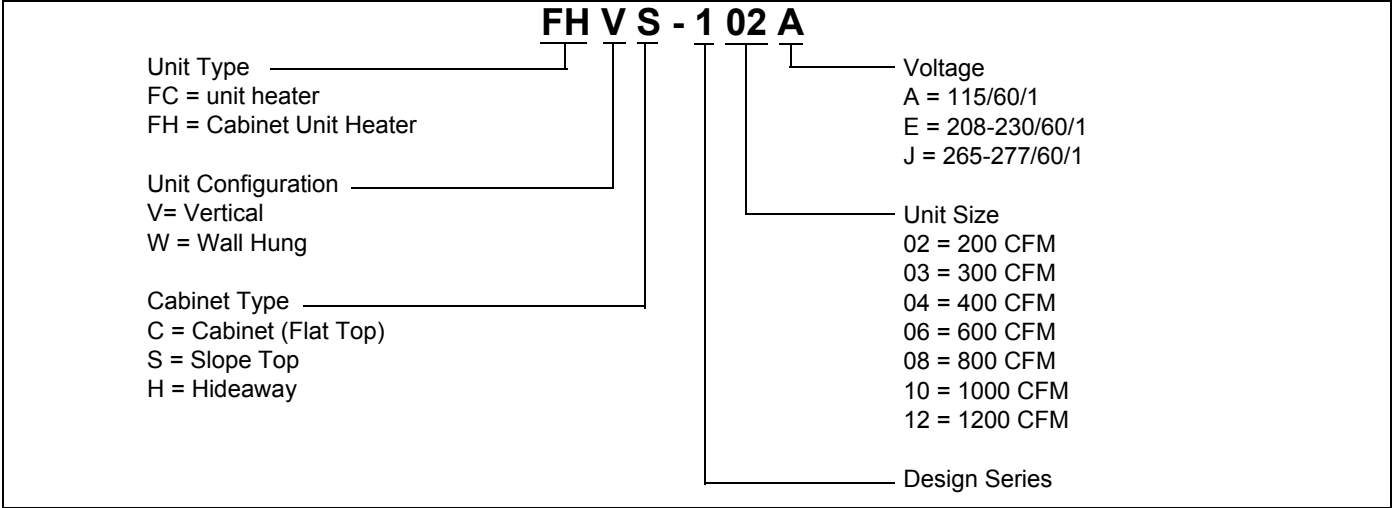
Engineered for flexibility and performance™

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ThinLine™ 3G Vertical Unit Heaters



Figure 1: Nomenclature



AHRI Certification



Standard size units certified in accordance with the Room Fan-Coil Unit certification program, which is based on AHRI Standard 440.

Agency Listed



All standard units
All Canadian units

Features and Benefits

The ThinLine™ 3G Advantage

New ThinLine 3G vertical cabinet unit heaters combine the features most desired in a unit heater by building owners, specifying engineers and contractors alike. The result is a new, third-generation cabinet unit heater design that meets the needs of all three.

For building owners

ThinLine 3G unit heaters offer quiet operation. They fully comply with ASHRAE 62.1-2004 standards for high indoor air quality. And they offer a range of control options that can enhance occupant comfort and reduce operating costs. These units are also easy to maintain, with easy access to filters, fan motors and control systems. Heavier-gauge panels and locked control compartments for tamper-proof style cabinets are available. A total of five color options, both as standard and special requests are available for a variety of decor styles.

For specifying engineers

ThinLine 3G unit heaters provide great versatility. A variety of vertical models are available with multiple arrangements and configurations.

- Coil options include two, three, and four-row main coils to provide precise heating performance for any requirement. Electric preheat option is available for cases when hot water is shut down for the season.
- Multiple control options range from a simple fan speed switch to a low voltage interface board that can tie into most building automation systems. Non-communicating or communicating control options for LonTalk and BacNet will be available soon. Contact your McQuay representative for details.
- Hideaway units may be used in a horizontal position in the ceiling (with a ceiling conversion kit).

- Grille options include stamped inlet and outlet grilles and multidirectional grilles. Aluminum fresh air boxes are also available.
- Appearance options include cabinet units with a durable, powder paint finish and decorative wall plate panels for hideaway units in Cupola White or Antique Ivory. Other colors such as Off White, Putty Beige and Soft Gray are available as specials. Custom colors can be matched as a special item. Leveling feet are available, as are rear cabinet extensions in 4 and 8-inch depths. Tamper-proof units are a selectable option, with 16-gauge steel panels, a return grille and key-operated, locking access doors.

For contractors

For contractors, ThinLine 3G unit heaters feature Quick Ship options for fast delivery and a number of features that make installation fast and simple.

- Factory-mounted, wired and tested valve and piping packages for quick hookup to the building piping to reduce installation time. Packages can also be shipped loose with the unit for quick and easy field installation.
- Factory-mounted and tested controls minimize field setup. Depending on the option requested, controls can be wired with a 24 VAC transformer to provide a single-source power connection to the unit. Several options are available for unit or wall mounted thermostats and sensors. All wall-mounted thermostat and zone sensors require only low-voltage control wiring from the device to the unit control box.
- Easy, end-panel removal for hookup of electrical and piping connections minimizes field-labor time and cost.
- End compartment panels can be removed for installation and service without removing the front panel covering the fan blower section. This means that airflow through the filter and coil is not jeopardized for taking temperature and performance readings.
- The fan deck and motor assembly is easily removed when required for service.

Figure 2: Unit Features

Multiple Control Options

- From 3-speed switch to low voltage interface board
- Remote or unit-mounted thermostat
- 3-speed or staged fan control

Multiple Coil Options

- 2, 3 or 4-row main coil
- Electric preheat

Multiple Configurations

- Flat top
- Slope top
- Hideaway
- Wall mounted (coming soon)

Multiple Grille Options

- Stamped and multi-directional outlet grilles
- Return grille option

Standard Color Options

- Antique Ivory
- Cupola White

Special Color Options

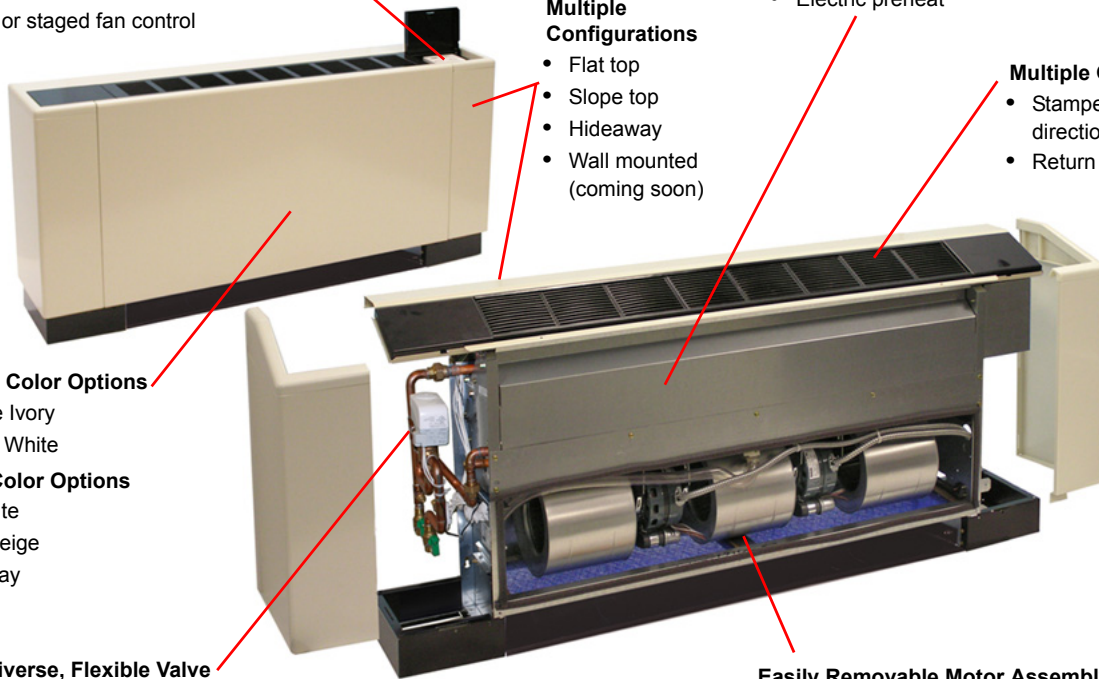
- Off White
- Putty Beige
- Soft Gray

Diverse, Flexible Valve & Piping Packages

- Software selectable Factory-mounted, wired and tested
- Or, factory-assembled and shipped loose for field installation
- Normally closed or open, two-position or modulating valves, line or low voltage

Easily Removable Motor Assembly

- For simple maintenance and service



Options and Accessories

Control Options

Manual 4-Position Fan Switch



Wall-mount four position switch shown

Several styles of the four-position fan switch (Off, High, Med, Low) are available for unit-mount, remote- or wall-mount. The remote-mount option operates on low-voltage or line-voltage power and can be provided with a factory-mounted, low-voltage interface board, which contains (3) 24-volt relays with line-voltage contactors and terminal connections. The transformer is factory-installed and wired. The unit-mounted option operates on line voltage.

Sequence of operation

- *Off*: Fan is turned off. The two-position, motorized fresh-air damper, when supplied, is closed.
- *High, Medium, Low*: Fan runs continuously at the selected speed. The two-position, motorized fresh-air damper, when supplied, is opened.

Unit-Mounted, Mechanical (Analog) Thermostat With 4-Position Fan Switch

This unit-mounted option combines the four-position fan switch described above with a mechanical thermostat.



Sequence of operation

- Fan Switch
 - *Off*: Fan is turned off. The two-position, motorized fresh-air damper, when supplied, is closed.
 - *High, Medium, Low*: Fan runs continuously at the selected speed. The two-position, motorized fresh-air damper, when supplied, is opened.
- Thermostat
 - Cycles the valve(s) open or closed on demand based on occupant-desired level.

Digital Thermostats

McQuay offers a broad range of unit-mounted and remote, wall-mounted digital thermostats with the capability to control On-Off, 3-wire floating and proportional modulating actuator, and Normally-Closed or Normally-Open valves. See [Table 1](#). For more information, refer to the McQuay publication ED 18513-1 and Installation Manuals for the specific thermostat (also see IM 980-1).



MT155 Thermostat

The MT155 series thermostat provides On-Off control for low-voltage or line-voltage valves and fan motors. It is usually remote-mounted. Options include a three-speed fan control for continuous fan operation. This thermostat can be field-mounted on any unit equipped with a low voltage interface board, refer to McQuay publication IM 1089.

Figure 3: MT155 Thermostats



Standard control options available:

- *Continuous fan and On-Off valve cycle operation*: The thermostat cycles the valves On and Off. The fan runs continuously at the manually selected fan speed.
- *On-Off fan and On-Off valve cycle operation*: The thermostat cycles the fan from the manually-selected fan speed to Off and it cycles the valves On and Off. An additional relay may be required. Only for remote applications.

When the system switch is in the Off position, the unit heater system, including the fan, is shut off.

MT158 and MT168 Thermostat-Controllers with Digital Display

Series MT158 and MT168 microprocessor-based thermostat controllers combine a proportional integral (PI) control algorithm with adaptive logic. They can be unit-mounted or remote-wall mounted.

Figure 4: MT158 and MT168 Thermostats



Heating outputs for the MT158 are individually configurable for three-wire floating control valves or On/Off valves in the Normally-Open (NO) or Normally-Closed (NC) modes.

Heating outputs for the MT168 provide 0-10 Vdc or 4-20 mA. An integrated, three-speed fan control switch is line-voltage, capable to allow direct connection to the fan motors. Features include a Fahrenheit or Celsius digital display.

Standard control options available:

- *Continuous fan and modulating (or On-Off) valve operation.* The fan runs continuously at the manually selected fan speed (High, Medium or Low). The controller modulates the valves or, on the MT158, dip-switches can be set to cycle the valves On and Off. Mainly used for unit-mount thermostats.
- *On-Off fan cycle operation and modulating (or On-Off) valve operation.* The controller cycles the fan from the manually selected fan speed to Off. The controller modulates the valves or, on the MT158, dip-switches can be set to cycle the valves On and Off. Used for remote-mount thermostats or with a remote room temperature sensor. An additional relay may be needed.

MT170 Wall mounted Thermostat-Controllers with Digital Display

Series MT 170 thermostats are used as a remotely mounted ON-OFF controller.

Figure 5: MT170 Thermostat



Standard control options available:

- *Continuous fan and On-Off valve operation.*
- *On-Off fan cycling and On-Off valve operation.*
- *Staged fan and On-Off valve operation.*

MTA170 and MTB170 microprocessor digital display thermostat is a stand-alone digital controller that supplies relay control of heating, outside air and up to three fan speeds. The thermostat's configuration can supply standard (continuous or cycling) fan, staged fan and fan coil operation. Energy saving features include temperature range limit adjustment, staged fan operation, occupancy detection and setback control. A user may select a temperature display in °F or °C.

MTA170 fan speed is determined by manual selection of HI, MED or LO. On the MTB170, the fan speed is configured for staged fan operation and does not have speed selection capability available.

Table 1: Thermostat Summary Table

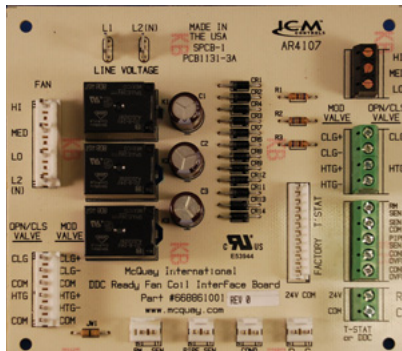
Thermostat Type	Model	Mounting	Software Tabs
Mechanical 3-speed Fan Switch with Off/Hi/Med/Lo Settings	4P-3SP	Unit or Remote	Accessories or Control Options
On/Off Switch with 3-speed Fan Switch with Hi/Med/Lo Settings and Switched Auxiliary Connection	MTE-155	Remote*	Accessories
2-Pole Dead-Band Auto-Changeover Thermostat with Manual On-Off System Switch and Manual 3-Speed Fan Switch, On/Off Valve Control	MTB-155	Remote*	Accessories
Thermostat with Manual Heat-Off-Cool System Switch and Manual 3-speed Fan Switch, On/Off Valve Control	MTA-155	Remote*	Accessories
Digital Thermostat 24 vac/120-277 vac with 3-speed Fan Control (Continuous or Fan Cycle)	MTA-170	Remote	Accessories
Digital Thermostat 24 vac/120-277 vac with Staged Fan (Continuous or Fan Cycle)	MTB-170	Remote	Accessories
Digital Thermostat with Dead Band Auto-Changeover for Heating/Cooling, On/Off or 3-wire Floating Valve Control and 3-speed Fan Switch	MTB-158	Unit or Remote	Digital Control Type or Accessories
Digital Thermostat with Dead Band Auto-Changeover for Heating/Cooling, On/Off, and Manual 3-speed Fan Switch	MTA-158	Unit or Remote	Digital Control Type or Accessories
Digital Thermostat with Auto-Changeover, Dead-Band, 0-10 vDC Proportional Modulating Valve Control.	MTB-168	Unit or Remote	Digital Control Type or Accessories
Digital Thermostat with Auto-Changeover, Dead-Band, 0-10 vDC Proportional Modulating Valve Control, and Manual 3-speed Fan Switch	MTA-168	Unit or Remote	Digital Control Type or Accessories

*Can be field-mounted on units with Low Voltage Interface Boards, refer to IM1089

Options and Accessories

Low Voltage Interface Board

The Low-Voltage, Interface Board (LV board) is used with any remote (wall-mounted) McQuay thermostat. It can also be used with a BAS (Building Automation System) control where low voltage is needed to operate a unit heater.



The LV interface board includes:

- Three 24-volt relays with line voltage contactors to operate fan motor speeds
- A factory wired and installed transformer
- Terminal connections for interfacing to:
 - An optional wall-mounted thermostat
 - Low-voltage actuator for a control valve
 - A return air sensor

Customer-Supplied Controls

Your McQuay representative can work with engineers and/or contractors to factory install and wire other manufacturers' DDC controllers in one of the end pockets of the unit heater. Contact your local McQuay representative for assistance with your specific project.

Decorative Wall Plate Option

Decorative wall plates have rounded corners for an attractive appearance. Wall plate can be selected as an accessory in a variety of colors with front or top discharge. Custom colors may be available. Contact your McQuay Applications Group with inquiries.



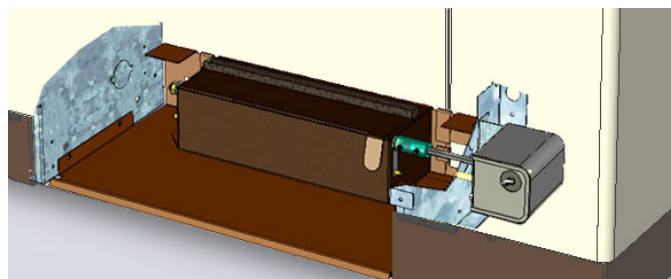
For dimensions, please refer to page 26

Cabinet Color Options

Exposed units are shipped in the standard color of Antique Ivory. Special colors include: Cupola White, Off White, Putty Beige and Soft Gray. For details of paint colors and finishes, refer to McQuay publication Form 2F-1188. Metal samples are available upon request.

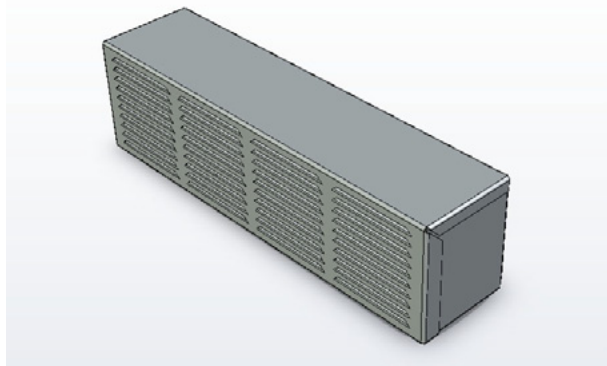
Fresh Air Damper Options (Manual and Motorized)

A fresh air intake damper that will provide up to 25% fresh air can be ordered either as factory-installed or as a field-installed kit. The kit consists of an intake with damper blade and insect screen. The damper may be manually controlled through the return air opening or with an optional factory- or field-installed 24 V damper motor. If freezing air temperatures are expected, the damper must be closed or outside air must be tempered before entering the unit. A low-temperature sensor is recommended.



Fresh Air Intake Box Option

Fabricated of aluminum with weep holes, the Fresh Air Intake Box has a double set of louvers in series to prevent moisture draw-through. This is used with a fresh air damper and is mounted in an exterior wall.



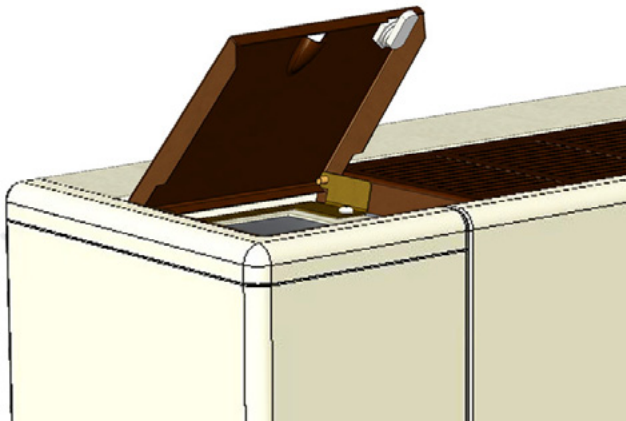
For dimensions, please refer to page 26

Ceiling Conversion Kit

Hideaway unit heaters can be modified to be placed in ceilings in a horizontal position or vertically in an inverted position. Ceiling conversion kits secure fan decks in the horizontal or inverted vertical position. Decorative wall plates can be used in ceiling installations with the front discharge orientation only.

Tamperproof Cabinet Option

This option can be factory- or field-installed on cabinet units to prevent access to unit controls and unauthorized removal of cabinet panels. It includes a key-lock access door to unit controls and torx head screws for cabinet panels. Stamped grille for return air is standard with tamper-proof models.

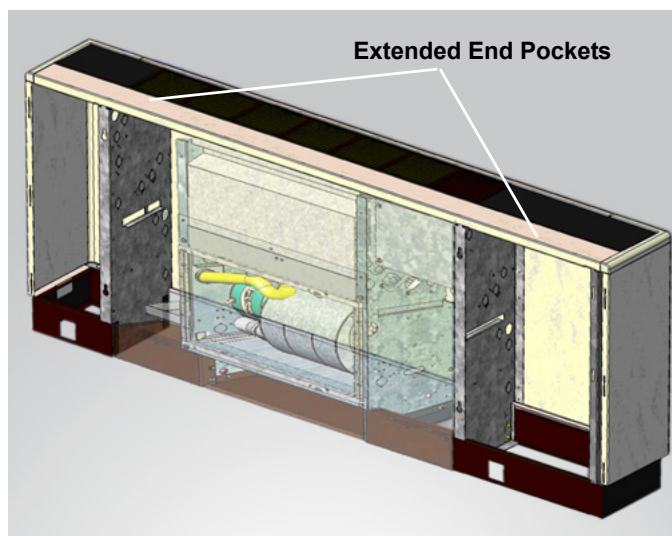


Extended End Pockets and Raised Sub-bases

Standard end pockets on McQuay units can accommodate most installation requirements. Therefore, extended pockets are seldom needed. However, kits for 4" or 8" extensions on both sides of the unit are available (except size 12, where a total extension of 8" is only possible). The extended end pockets are used for applications with field-installed valve piping packages or controls by others when extra space is needed. They can also be used for remodeling or replacement projects to hide floor covering terminations. Contact your McQuay representative for details.

Note: When extended end pockets are used, a standard rear cabinet extension may not be usable. Call your McQuay Sales Representative for suggestions.

Raised sub-base options are also available. Contact your McQuay Sales representative for details.

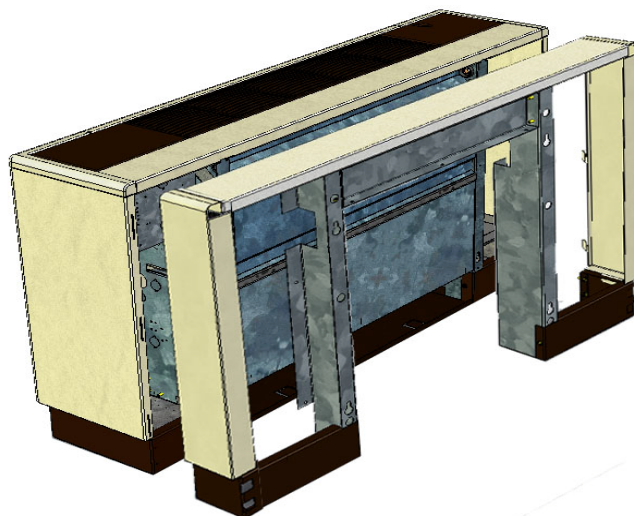


Rear Cabinet Extension Option

This kit is available for applications where additional depth is needed. This kit is not designed to be an air duct or outside air plenum. 4" extension kits are standard. Other extension depths are available as a special request. Contact your McQuay representative for details.

Some common applications for the rear cabinet extension include:

- Additional depth for unit appearance
- Additional clearance for cross-over piping and connections
- Extend the discharge grille past drapery or wall hangings
- Hide floor covering terminations in remodeling projects



Note: When extended end pockets are used, a standard rear cabinet extension may not be usable. Call McQuay Applications Group for suggestions.

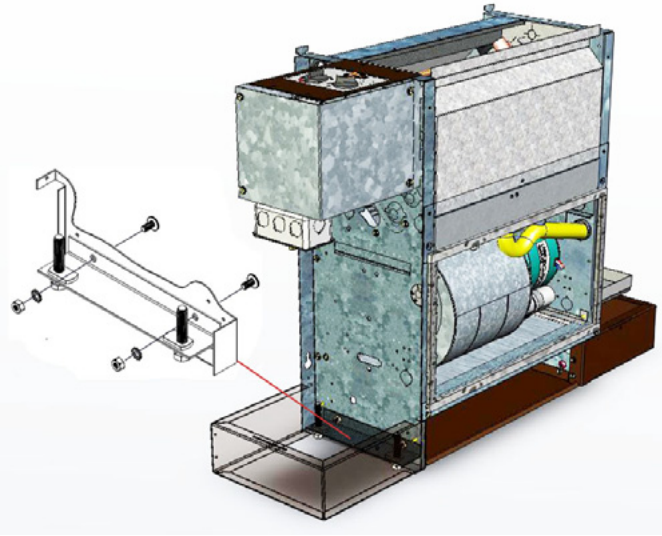
Options and Accessories

Return Air Grille

A stamped-steel return air grilles are available as factory- or field-installed options. This option is standard with tamper-proof models.

Leveling Legs Option

Field- or factory-installed kits are available with 0" to 1" adjustment for positive leveling of floor-mounted units.



Factory Valve & Piping Packages

Factory valve and piping packages are available for either right or left hand connections. Packages can be either factory-installed or factory-assembled and shipped loose with the unit. Units are also available without valve and piping packages in

either a right-hand or left-hand configurations. All packages are fully leak-tested at the factory.

Factory-installed packages are sweated to the coil and wired to the unit control box or LV Interface Board. Hot water pipes are the only field connections required. Piping is 1/2" nominal copper (5/8" OD).

Pre-determined field connection points are located for easy access. See [Figure 13, page 12](#) for connection locations. The installing contractor can pre-pipe the building water connections before the units arrive on the jobsite. A label clearly identifies chilled and hot water connection points on every unit.

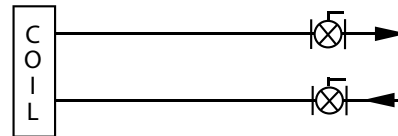
Available Packages

Numerous piping packages are available to match design configurations. Additional components can be added to meet exact requirements, including P/T ports, unions, and flexible stainless steel hoses. All valve and piping packages are software-selectable.

Shut-Off Only Packages

Shut-Off Only piping packages provide interconnecting copper piping and shut-off ball valves for ease in connecting supply and return lines to the unit. Coils on all units have integral venting valves.

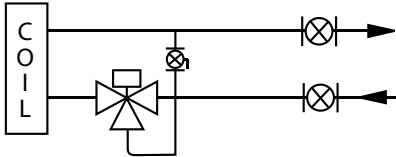
Figure 6: Shut-Off Only Package
(See [Figure 12](#) for components key)



Basic Packages

Basic valve and piping packages add control valves to the Shut-Off Only package. All McQuay control valves are factory-mounted in the supply water pipe. See [Control Valve Options, page 12](#) for more information on the variety of control valves available.

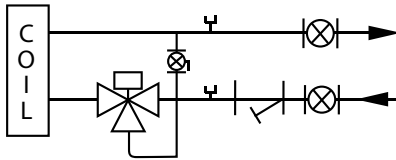
Figure 7: Basic Package
(See [Figure 12](#) for components key)



Enhanced Packages

Enhanced valve and piping packages add a strainer to the Basic package supply water pipe. The strainer is attached to the supply water pipe at the coil connections. The strainer body is cast brass construction with a stainless steel mesh that is easy to remove for cleaning.

Figure 8: Enhanced Package
(See [Figure 12](#) for components key)

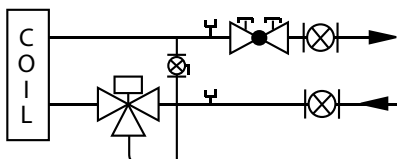


Premium Packages

Premium valve and piping packages replace the Basic package's ball valve in the return line with a manual or automatic circuit setter. The manual circuit setter is also known as a manual flow control valve. The auto circuit setter acts as both a flow setting device and a shut-off valve. It allows water flow through the unit heater to be set quickly and accurately. The circuit setter includes a cartridge within the valve body that is sized to allow a specific flow rate through the coil without any action required by a system piping balancer.

P/T ports are included, which are used to measure the temperature or pressure drop across the valve. This pressure drop can be compared to factory supplied tables that relate the pressure drop to a specific flow rate. A manual circuit setter valve also has a memory stop so that the correct setting can be found quickly.

Figure 9: Premium Package
(See [Figure 12](#) for components key)



Deluxe Packages

Deluxe valve and piping packages add a strainer to the Premium package. The strainer is available with or without an optional draining (blow-off) valve.

Figure 10: Deluxe Package
(See [Figure 12](#) for components key)

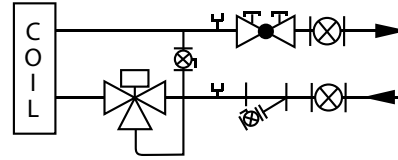


Figure 11: Components Key for Schematics

		Manual Shutoff Ball Valve Water shut-off. Handle rotates 90 degrees.
		Manual Shutoff Ball Valve with Memory Stop Used on return line for limiting water flow.
		2-Way, N.C., On/Off Valve, Spring Return Turn On or Off water flow to the coil in response to 24V or line voltage signal
		3-Way, N.C., On/Off Valve, Spring Return Bypass water flow away from coil in response to 24V or line voltage signal. Includes fixed orifice for balancing.
		2-Way Modulating Valve (3-wire or proportional) Modulates water flow in response to 24V signal.
		3-Way Modulating Valve (3-wire or proportional) Modulates or bypass water flow in response to 24V signal. Includes fixed orifice for balancing.
		PT Port For connecting a pressure or temperature gauge.
		Y-Strainer Removable screen filters out small particles from supply line during normal system operation.
		Manually Adjustable Circuit Setter with Shutoff Pressure-dependent, ball-type, manual flow control.
		Cartridge-Type, Auto-Fixed Circuit Setter Pressure-compensated, automatic fixed-flow control.
		Union For easy removal of piping from coil.
		Bypass Balancing Valve Adjustable balancing of water flow through the bypass circuit on a 3-way control valve. Note: McQuay 3-way valves are equipped with a fixed balance orifice in the bypass line, eliminating the need for a separate balancing valve.

Options and Accessories

Control Valve Options

Except for Shut-off Only packages, all valve and piping packages include control valves for controlling water flow. All McQuay control valves are factory assembled and mounted in the supply water pipe downstream of the coil. Several options are available:

Two-Way/Two-Position Valves

These valves will be either Fully-Open or Fully-Closed in response to a line voltage (115, 208-230 or 265-277 VAC) or 24 VAC signal from the McQuay thermostat or controller. Some means of relieving pump head pressure should be applied when two-way valves are selected. Normally-Open or Normally-Closed valves are available, both spring-return type.

Three-Way Two-Position Valves

These valves either allow full water flow through the coil or divert the flow through a bypass line. The valves respond to a line voltage (115, 203-230 or 265-277 VAC) or to 24 VAC signal from the McQuay thermostat or controller. All standard three-way valves come with a fixed-balance orifice in a bypass line to compensate for flow balancing in the bypass position, eliminating the need for an additional balancing valve. Normally-Open or Normally-Closed valves are available.

Two-Way Modulating Valves

These valves modulate the water flow through the coil in response to a signal from the McQuay thermostat or controller. Standard McQuay modulating valves are three-wire floating point equal percentage valves. Zero to 10 VDC proportional valves are also available. The modulating valves are factory mounted in the supply water pipe upstream of the coil.

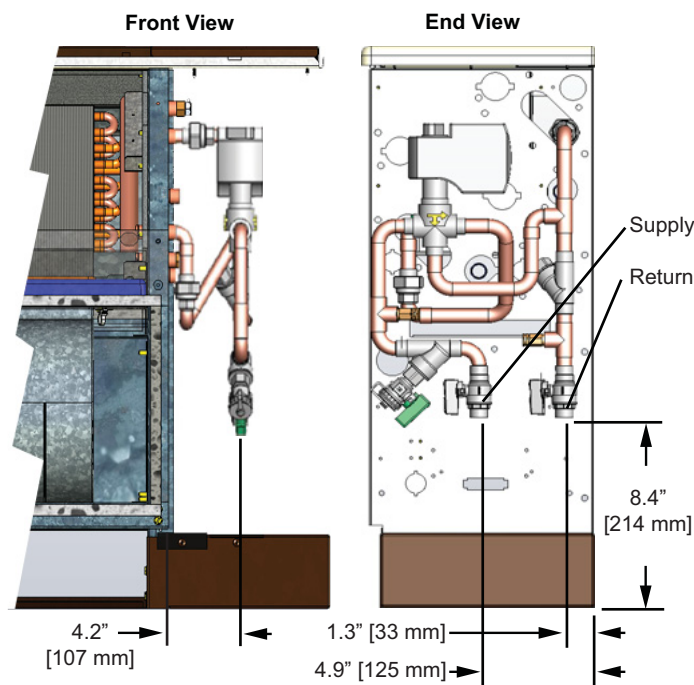
Three-Way Modulating Valves

These valves modulate water flow through a coil in response to a signal from a McQuay thermostat or controller. Three-way valves allow water that is directed through the coil to mix with water that is directed through the bypass line. This mixture exits through the leaving water pipe. Modulating valves are three-wire, floating-point equal percentage valves or 0-10 VDC proportional. The modulating valves are factory mounted in the supply water pipe upstream of the coil.

Selecting Correct Size Modulating Valves

McQuayTools™ software automatically selects the best modulating valve size for the unit and coil being considered. By combining the ARI performance data, the coil flow rate and the DP across the water coil, the water coil Cv is calculated and the best matching modulating port size is selected. Valve and piping packages can easily be configured and automatically selected using McQuayTools™.

Figure 12: Hook Up Locations: Factory-installed Valve & Piping Packages



Deluxe valve package shown

Note: All valve packages, regardless of components included, have the same hookup locations. Right-hand connections are shown here. Left-hand connection distances are the same. Distances to connections from chassis are from unit mounting holes. Dimensions may vary slightly from given values.

Unit Selection

To achieve an efficient unit heater system, accurate system design and proper equipment selection is necessary. Variations, limitations/control of unit heater systems, design conditions and design load calculations are not described in detail in this catalog. More detailed information may be found in the ASHRAE Guide. This catalog contains ARI-certified ratings and application ratings for ThinLine 3G cabinet unit heater units from which a design engineer can make initial unit selections to meet system requirements.

A mechanical system designer must select the unit types best suited to the overall system before the actual unit sizes can be determined. The factors that generally influence this decision are: intended building usage, building layout, architectural and aesthetic values, economics, geographical location, and type of maintenance service available. The general results may be a mixture of unit types within a given system. For McQuay product information, please go to www.mcquay.com.

Basic design data

Prior to selecting individual unit sizes, a design engineer must fix or determine the following factors:

- Inside and outside design temperatures
- Heat gains and losses of the area to be served
- Ventilation air
- Properties of the heating medium
- Available electric power service
- Any special design requirements of the building or system

Unit Size

The capacity ratings presented in this catalog are provided for initial unit selection only. Water heating capacities, unit air flow, static pressure and glycol solutions are all incorporated into the program to provide the best possible selection. Consult your McQuay representative for a selection tailored to specific applications.

Unit sizes for the ideal system should be selected by calculating peak load requirements due to unusually high occupancy or severe climatic conditions and with fans operating at high speed. Ordinary day-to-day cooling and heating requirements are then achieved at low and medium speeds.

The initial unit selection should be checked for air volume in the design system and the heating capacities checked against actual operating conditions.

Performance Data

Heating Performance - Hot Water Coil

All performance measured on high speed tap, 115 V, zero ESP, with a throwaway filter. Heating performance is based on 70°F (21°C) entering air temperature, 180°F (82°C) entering hot water temperature with a 30°F (17°C) ΔT .

Table 2: Heating performance

Unit Size	Coil Rows	SCFM	Heating Performance			
			TMBh (TkW)	Q/ITD	Gpm (L/s)	WPD FtofH ₂ O (kPa)
02	2 Row	218	14.1 (4.1)	0.128 (0.067)	0.9 (0.06)	0.3 (0.9)
	3 Row	209	17.2 (5.0)	0.156 (0.082)	1.2 (0.08)	0.5 (1.5)
	4 Row	200	19.2 (5.6)	0.175 (0.092)	1.2 (0.08)	0.6 (1.8)
03	2 Row	299	19.8 (5.8)	0.180 (0.095)	1.1 (0.07)	0.4 (1.2)
	3 Row	291	24.4 (7.2)	0.222 (0.118)	1.5 (0.09)	0.5 (1.5)
	4 Row	265	27.2 (8.0)	0.247 (0.131)	1.9 (0.12)	1.5 (4.5)
04	2 Row	398	28.3 (8.3)	0.257 (0.136)	1.7 (0.11)	1.0 (3.0)
	3 Row	385	34.0 (10.0)	0.309 (0.164)	2.2 (0.14)	1.3 (3.9)
	4 Row	374	38.9 (11.4)	0.354 (0.187)	2.9 (0.18)	3.4 (10.2)
06	2 Row	602	41.0 (12.0)	0.373 (0.196)	2.9 (0.18)	4.4 (13.1)
	3 Row	565	47.1 (13.8)	0.428 (0.226)	3.7 (0.23)	5.2 (15.5)
	4 Row	554	52.6 (15.4)	0.478 (0.252)	4.6 (0.29)	9.0 (26.9)
08	2 Row	675	50.3 (14.7)	0.457 (0.241)	3.6 (0.23)	7.7 (23.0)
	3 Row	656	58.7 (17.2)	0.534 (0.281)	4.5 (0.28)	8.0 (23.9)
	4 Row	634	64.3 (18.8)	0.585 (0.308)	5.5 (0.35)	14.8 (44.2)
10	2 Row	831	62.4 (18.3)	0.567 (0.299)	4.4 (0.28)	6.8 (20.3)
	3 Row	808	73.2 (21.5)	0.665 (0.352)	5.7 (0.36)	8.7 (26.0)
	4 Row	795	80.8 (23.7)	0.735 (0.388)	6.7 (0.42)	11.1 (33.2)
12	2 Row	1118	78.3 (22.9)	0.712 (0.375)	5.6 (0.35)	12.5 (37.4)
	3 Row	1059	95.4 (28.0)	0.867 (0.458)	7.1 (0.45)	15.5 (46.3)
	4 Row	1022	103.8 (30.4)	0.944 (0.497)	8.3 (0.52)	18.3 (54.7)

Air Volume Capacity Data

Air volumes shown in the table are measured at the motor speeds indicated with 115v/60/1 electrical power, with a 1” throwaway filter installed, and with a stamped discharge grill on a vertical cabinet unit or a discharge duct collar on a hideaway unit at approximately 0.10 inch of pressure drop.

Table 3: SCFM, 115/60/1 Motor (Factor 88%)

Unit Size	Main Coil Rows	Heating Coil Rows	SCFM		
			Motor on High Speed	Motor on Medium Speed	Motor on Low Speed
02	2 Row	None	214	197	167
	3 Row	None	204	190	161
	4 Row	None	197	183	159
03	2 Row	None	296	264	211
	3 Row	None	292	256	205
	4 Row	None	283	253	206
04	2 Row	None	380	330	261
	3 Row	None	365	325	250
	4 Row	None	368	319	249
06	2 Row	None	600	524	421
	3 Row	None	559	483	373
	4 Row	None	554	486	409

Unit Size	Main Coil Rows	Heating Coil Rows	SCFM		
			Motor on High Speed	Motor on Medium Speed	Motor on Low Speed
08	2 Row	None	668	585	465
	3 Row	None	654	576	456
	4 Row	None	632	562	450
10	2 Row	None	831	712	548
	3 Row	None	807	696	536
	4 Row	None	789	680	523
12	2 Row	None	1110	995	840
	3 Row	None	1059	960	822
	4 Row	None	1025	930	803

Electrical Data

MCA (Minimum Circuit Ampacity), MOP (Maximum Overcurrent Protection) or MFS (Maximum Fuse Size) Calculations

The minimum circuit ampacity (MCA) is the minimum wire size required for a field-wired product. The maximum overcurrent protection (MOP), or maximum fuse size (MFS) is the maximum fuse or circuit breaker size required to properly protect the equipment.

Select a standard fuse size or HACR type circuit breaker equal to the MOP. Standard Fuse Sizes are: 15, 20, 25, 30, 35, 40, 45, 50, 60 amps. Use the next larger standard size if the MOP does not equal a standard size. See [Table 5](#) through [Table 7](#) for motor FLAs.

HACR (Heating, Air-Conditioning and Refrigeration) type circuit breakers are required in the branch circuit wiring for all unit heaters with electric heat.

Note: MCA and MOP ratings are based on the unit and electric heat power supply having the same voltage. If the electric heat power supply is different, a separate circuit breaker may be required. Follow local codes.

Heater Amps = (Heater kW x 1000)/Heater Voltage

Note: Use 120V heater voltage for 115V units. Use 240V heater voltage for 230V units.

MCA = 1.25 x (heater amps + all motor FLAs)

MOP or MFS = (2.25 x Largest Motor FLA) + Second Motor FLA + Heater Amps (If Applicable)

Electric Heaters

Table 4: Electric Heat kW*

Unit Size	Unit Voltage	kW									
02	115	0.5	1.0	1.5							
	230	0.5	1.0								
	277	0.5	1.0	1.5							
	208	0.5	0.9								
03	115		1.0	1.5	2.0						
	230		1.0								
	277		1.0	1.5							
	208		0.9								
04	115		1.0	1.5	2.0						
	230		1.0	1.5	2.0						
	277		1.0	1.5	2.0						
	208		0.9	1.4	1.8						
06	115			1.5	2.0						
	230			1.5	2.0	2.5	3.0				
	277			1.5	2.0	2.5	3.0	4.0			
	208			1.4	1.8	2.3	2.7				
08	115				2.0						
	230				2.0	2.5	3.0	4.0			
	277				2.0	2.5	3.0	4.0			
	208				1.8	2.3	2.7	3.6			
10	115										
	230					2.5	3.0	4.0			
	277					2.5	3.0	4.0			
	208					2.3	2.7	3.6			
12	115										
	230						3.0	4.0	5.0	6.0	
	277						3.0	4.0	5.0	6.0	
	208						2.7	3.6	4.5	5.4	

Note: *Electric heat MBh = (Heater kW) x(3.413)

Motor Electrical Data

Table 5: Electrical Data - Standard (Free Discharge) Motor - 2 Row Coil

	Motor Speed	Size 2			Size 3			Size 4			Size 6			Size 8			Size 10			Size 12		
		Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM
115 V	High	0.49	53	1059	0.56	63	993	0.68	72	991	1.32	123	1122	1.20	129	1015	1.37	148	987	2.52	237	1123
	Med	0.42	44	984	0.48	53	886	0.57	59	876	0.99	95	987	1.01	108	910	1.16	124	866	1.81	175	1013
	Low	0.35	36	856	0.39	42	726	0.45	45	705	0.90	81	815	0.83	84	741	0.92	95	681	1.64	153	864
208 V	High	0.27	53	955	0.30	62	837	0.38	75	928	0.61	122	1102	0.77	154	1070	0.72	147	860	1.15	236	1113
	Med	0.23	48	766	0.24	52	639	0.30	59	764	0.44	87	910	0.58	48	709	0.58	120	681	0.83	166	960
	Low	0.19	39	561	0.19	42	485	0.25	49	611	0.36	65	691	0.50	39	504	0.45	93	533	0.70	127	708
230	High	0.27	57	1026	0.30	67	949	0.37	75	998	0.63	133	1124	0.80	180	1093	0.73	163	954	1.19	261	1131
	Med	0.23	52	914	0.25	60	791	0.31	64	880	0.41	89	1011	0.57	131	1006	0.61	139	797	0.81	178	1021
	Low	0.20	45	742	0.21	50	607	0.26	6	737	0.36	78	844	0.50	111	870	0.50	113	616	0.71	149	831
265 V	High	0.28	55	1026	0.29	61	931	0.34	77	917	0.47	117	1118	0.79	172	1097	0.65	149	906	0.95	246	1104
	Med	0.20	49	915	0.21	44	778	0.27	64	771	0.34	85	986	0.56	133	1007	0.50	126	737	0.74	188	933
	Low	0.16	41	758	0.16	43	597	0.20	46	609	0.30	69	836	0.47	114	882	0.38	99	594	0.63	152	737
277 V	High	0.29	57	1049	0.29	66	948	0.35	75	955	0.49	132	1125	0.81	183	1110	0.71	159	948	0.97	265	1115
	Med	0.22	51	953	0.22	58	788	0.27	65	820	0.34	86	1018	0.57	139	1030	0.51	135	791	0.72	196	968
	Low	0.16	44	827	0.17	47	625	0.21	56	682	0.30	72	890	0.47	120	924	0.39	108	638	0.64	159	793

Table 6: Electrical Data - Standard (Free Discharge) Motor - 3 Row Coil

	Motor Speed	Size 2			Size 3			Size 4			Size 6			Size 8			Size 10			Size 12		
		Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM
115 V	High	0.48	52	1067	0.55	62	1005	0.68	72	994	1.29	121	1120	1.20	129	1018	1.37	149	992	2.48	231	1127
	Med	0.41	43	1007	0.48	53	899	0.57	59	876	1.01	96	976	1.01	108	915	1.15	124	871	1.76	169	1029
	Low	0.34	35	889	0.39	42	722	0.45	45	700	0.89	80	783	0.83	84	749	0.91	95	689	1.60	149	895
208 V	High	0.26	52	962	0.29	62	847	0.38	75	931	0.60	120	1100	0.77	154	1073	0.72	148	865	1.13	230	1117
	Med	0.22	46	784	0.24	52	648	0.30	59	764	0.45	88	900	0.58	48	713	0.57	119	685	0.81	160	975
	Low	0.18	38	583	0.19	42	482	0.25	49	607	0.36	64	664	0.50	39	509	0.45	93	539	0.68	124	733
230	High	0.26	55	1034	0.29	66	960	0.37	75	1001	0.62	131	1122	0.80	179	1096	0.72	163	959	1.17	254	1135
	Med	0.22	50	935	0.25	59	803	0.31	64	880	0.42	90	1000	0.57	130	1011	0.60	138	802	0.79	172	1037
	Low	0.19	44	771	0.21	50	604	0.26	6	732	0.36	77	811	0.50	111	879	0.49	113	624	0.69	145	861
265 V	High	0.27	54	1034	0.28	61	942	0.34	77	920	0.46	115	1116	0.79	172	1100	0.65	150	911	0.93	240	1108
	Med	0.20	47	936	0.21	44	789	0.27	64	771	0.35	86	975	0.56	133	1012	0.49	126	742	0.72	182	948
	Low	0.16	41	787	0.17	44	594	0.20	46	605	0.30	68	803	0.47	114	891	0.38	99	601	0.61	148	763
277 V	High	0.28	56	1057	0.29	65	959	0.35	75	958	0.48	130	1123	0.81	183	1113	0.70	159	953	0.95	258	1119
	Med	0.21	49	975	0.22	58	800	0.27	65	820	0.35	87	1007	0.57	139	1035	0.51	134	796	0.70	189	983
	Low	0.16	43	859	0.17	48	622	0.21	56	677	0.30	71	855	0.47	120	933	0.39	108	646	0.62	155	821

Table 7: Electrical Data - Standard (Free Discharge) Motor - 4 Row Coil

	Motor Speed	Size 2			Size 3			Size 4			Size 6			Size 8			Size 10			Size 12		
		Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM
115 V	High	0.48	52	1069	0.54	61	1019	0.68	71	1002	1.28	118	1127	1.17	126	1027	1.36	152	993	2.46	228	1131
	Med	0.41	43	1007	0.47	52	923	0.57	59	890	0.93	88	1017	0.98	105	935	1.15	123	863	1.73	166	1036
	Low	0.34	35	888	0.38	41	779	0.45	45	712	0.86	77	873	0.81	83	769	0.91	94	684	1.57	147	909
208 V	High	0.26	52	964	0.29	60	859	0.38	74	938	0.60	117	1107	0.75	150	1083	0.71	151	865	1.12	227	1121
	Med	0.22	46	784	0.23	50	665	0.30	59	776	0.41	81	938	0.56	47	729	0.57	118	678	0.80	157	982
	Low	0.18	38	582	0.19	41	520	0.25	49	617	0.35	62	740	0.48	39	523	0.45	92	535	0.67	122	744
230	High	0.26	55	1036	0.29	64	973	0.37	74	1009	0.62	128	1129	0.78	175	1106	0.72	166	959	1.16	251	1139
	Med	0.22	50	935	0.24	58	824	0.31	64	894	0.39	83	1042	0.55	127	1034	0.60	137	795	0.78	169	1044
	Low	0.19	44	770	0.20	49	652	0.26	6	745	0.35	74	904	0.49	110	903	0.49	112	619	0.68	143	874
265 V	High	0.27	54	1036	0.28	59	955	0.34	76	927	0.46	112	1123	0.77	167	1110	0.65	153	911	0.92	237	1112
	Med	0.20	47	936	0.21	42	810	0.27	64	783	0.32	79	1016	0.55	130	1034	0.49	125	735	0.71	179	954
	Low	0.16	40	786	0.16	43	641	0.20	46	615	0.29	65	895	0.45	113	915	0.37	98	597	0.60	146	775
277 V	High	0.28	56	1059	0.28	63	972	0.35	74	966	0.48	127	1130	0.79	178	1123	0.70	162	953	0.94	255	1123
	Med	0.21	49	975	0.21	56	821	0.27	65	833	0.32	80	1049	0.55	136	1058	0.51	133	789	0.69	186	990
	Low	0.16	42	858	0.17	46	671	0.21	56	689	0.29	68	953	0.46	119	959	0.39	106	641	0.61	153	834

Physical Data

Unit Data

Table 8: Unit Data

	02	03	04	06	08	10	12
Coil Data							
Face Area, ft ² (cm ²)	0.74 (685)	1.08 (1004)	1.43 (1323)	2.11 (1962)	2.46 (2281)	3.14 (2917)	3.83 (3559)
Fins/inch (cm)	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]
Coil Dimensions							
2-Row L x D x H, in (cm)	11.8 x 1.7 x 9 (30.0x4.4x22.9)	17.3 x 1.7 x 9 (43.9x4.4x22.9)	22.8 x 1.7 x 9 (57.9x4.4x22.9)	33.8 x 1.7 x 9 (85.9x4.4x22.9)	39.3x 1.7 x 9 (99.8x4.4x22.9)	50.2 x 1.7 x 9 (127.6x4.4x22.9)	61.3 x 1.7 x 9 (155.7x4.4x22.9)
3-Row L x D x H, in (cm)	11.8 x 2.6 x 9 (30x6.6x22.9)	17.3 x 2.6 x 9 (43.9x6.6x22.9)	22.8 x 2.6 x 9 (57.9x6.6x22.9)	33.8 x 2.6 x 9 (85.9x6.6x22.9)	39.3 x 2.6 x 9 (99.8x6.6x22.9)	50.2 x 2.6 x 9 (127.6x6.6x22.9)	61.3 x 2.6 x 9 (155.7x6.6x22.9)
4-Row L x D x H, in (cm)	11.8 x 3.5 x 9 (30.0x8.8x22.9)	17.3 x 3.5 x 9 (43.9x8.8x22.9)	22.8 x 3.5 x 9 (57.9x8.8x22.9)	33.8 x 3.5 x 9 (85.9x8.8x22.9)	39.3 x 3.5 x 9 (99.8x8.8x22.9)	50.2 x 3.5 x 9 (127.6x8.8x22.9)	61.3 x 3.5 x 9 (155.7x8.8x22.9)
Connection Size	1/2" Nominal Copper (5/8" OD)						
Volume, Gal (Liters)							
2-Row	0.15 (0.6)	0.19 (0.7)	0.24 (0.9)	0.32 (1.2)	0.37 (1.4)	0.46 (1.7)	0.55 (2.1)
3-Row	0.20 (0.7)	0.26 (1.0)	0.32 (1.2)	0.45 (1.7)	0.52 (2.0)	0.64 (2.4)	0.77 (2.9)
4-Row	0.26 (1.0)	0.34 (1.3)	0.43 (1.6)	0.61 (2.3)	0.70 (2.6)	0.87 (3.3)	1.05 (4.0)
Fan/Motor Data							
Fan Quantity	1	1	2	2	3	4	4
Size, Dia" x W" (cm)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)	6.26 x 6.3 (15.9 x 16)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)
Motor Quantity	1	1	1	1	2	2	2
Filter Data							
Part Number	668332901	668332902	668332903	668332907	668332905	668332906	668332904
1" (25.4 cm) Media	Throw-away	Throw-away	Throw-away	Throw-away	Throw-away	Throw-away	Throw-away
Quantity	1	1	1	1	2	2	2
L x D x H, in. (cm)	16 x 8.75 x 1 (40.6 x 22 x 2.5)	21.5 x 8.75 x 1 (54.6 x 22 x 2.5)	27 x 8.75 x 1 (68.5 x 22 x 2.5)	38 x 8.75 x 1 (96.5 x 22 x 2.5)	21.7 x 8.75 x 1 (56.1 x 22 x 2.5)	27.2 x 8.75 x 1 (69.0 x 22 x 2.5)	32.7 x 8.75 x 1 (83.1 x 22 x 2.5)

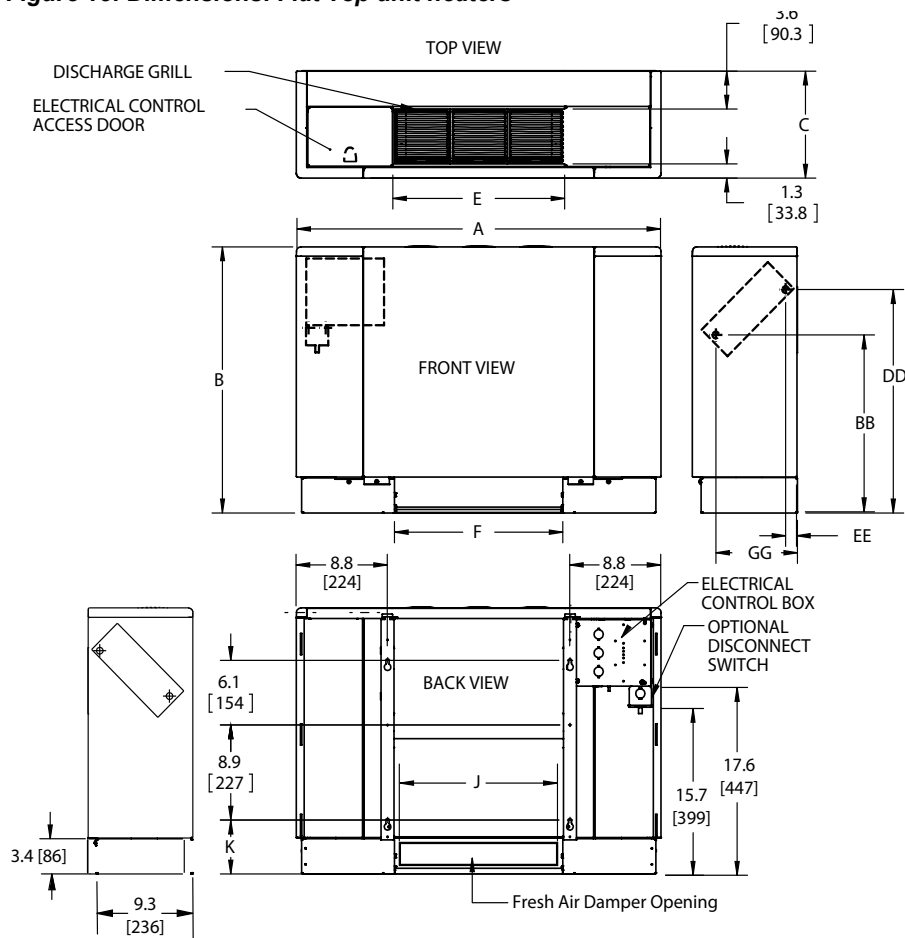
Table 9: Approximate Shipping Weights - lbs (kg)*

Unit Type	Unit Size						
	S02	S03	S04	S06	S08	S10	S12
FHVC, FHVS	84 (38)	95 (43)	108 (49)	131 (60)	152 (69)	177 (80)	202 (92)
FHVH, FHVI	55 (25)	63 (29)	74 (34)	91 (41)	110 (50)	129 (59)	149 (68)

Note: *Approximate shipping weights do not include valve packages or other options.

Unit Dimensions

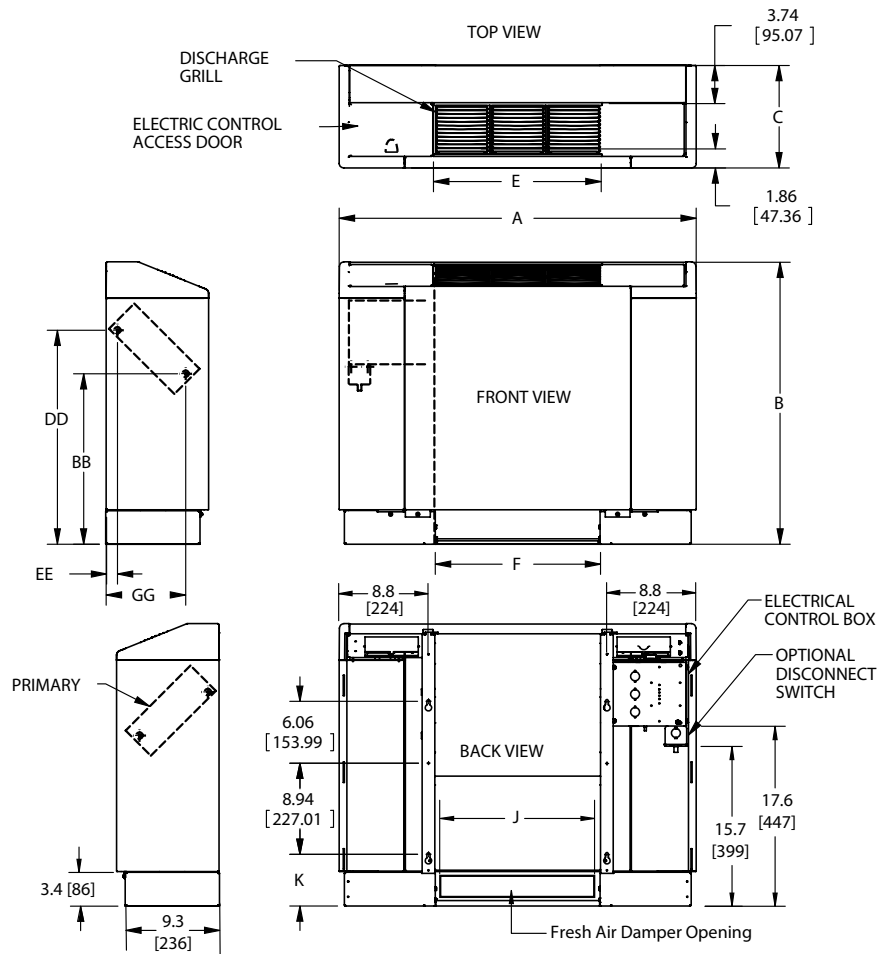
Figure 13: Dimensions: Flat Top unit heaters



Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	35.0	889	40.5	1029	46.0	1168	57.0	1448	62.5	1588	73.5	1867	84.5	2146
Unit Height	B	25.0	635	25.0	635	25.0	635	25.0	635	25.0	635	25.0	635	25.0	635
Unit Depth	C	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Floor to Bottom Mtg Hole	K	5	127	5	127	5	127	5	127	5	127	5	127	5	127
Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Fresh Air Damper Width	J	10	254	10	254	16	406	16	406	32	813	32	813	32	813

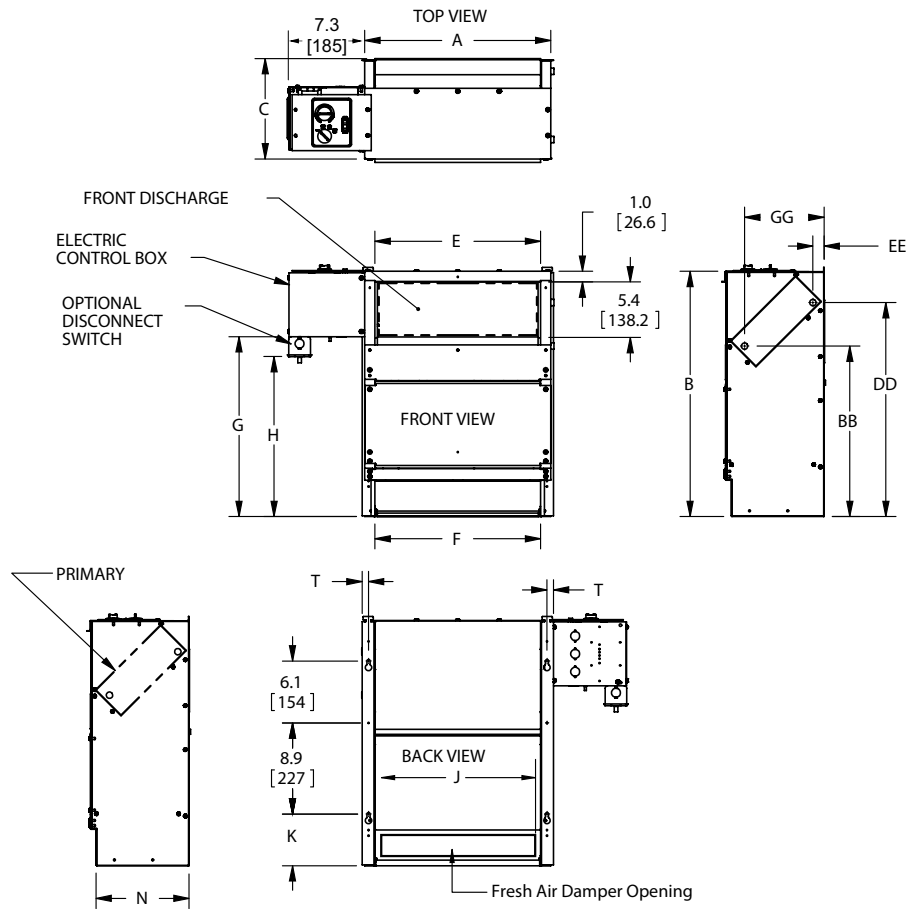
Physical Data

Figure 14: Dimensions: Slope Top unit heaters



Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	35.0	889	40.5	1029	46.0	1168	57.0	1448	62.5	1588	73.5	1867	84.5	2146
Unit Height	B	27.6	701	27.6	701	27.6	701	27.6	701	27.6	701	27.6	701	27.6	701
Unit Depth	C	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254	10.0	254
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Floor to Bottom Mtg Hole	K	5	127	5	127	5	127	5	127	5	127	5	127	5	127
Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Fresh Air Damper Width	J	10	254	10	254	16	406	16	406	32	813	32	813	32	813

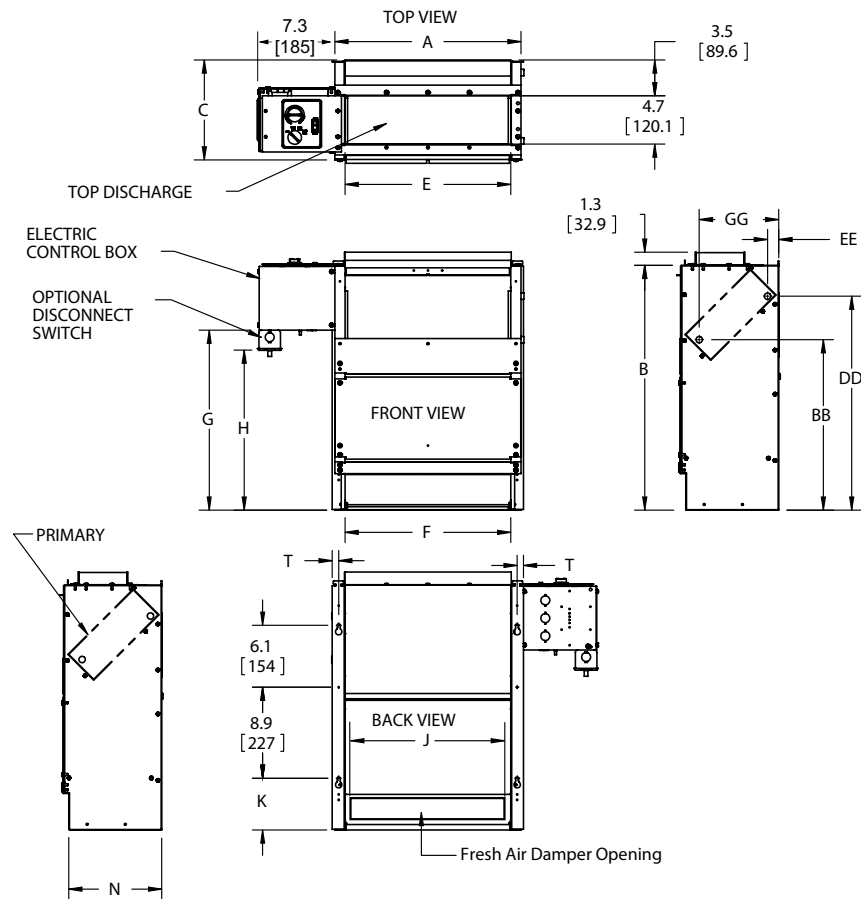
Figure 15: Dimensions: Hideaway, Front-Discharge unit heaters



Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	18.8	475	24.3	617	29.8	757	40.8	1036	46.3	1176	57.3	1455	68.3	1735
Unit Height	B	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610
Unit Depth	C	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Floor to Bottom Mtg Hole	K	5	127	5	127	5	127	5	127	5	127	5	127	5	127
Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Fresh Air Damper Width	J	10	254	10	254	16	406	16	406	32	813	32	813	32	813

Physical Data

Figure 16: Dimensions: Hideaway, Top-Discharge unit heaters

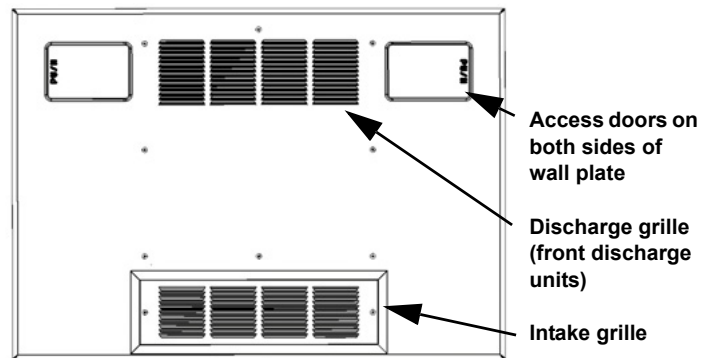


Dimension		S02		S03		S04		S06		S08		S10		S12	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Unit Width	A	18.8	475	24.3	617	29.8	757	40.8	1036	46.3	1176	57.3	1455	68.3	1735
Unit Height	B	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610	24.0	610
Unit Depth	C	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243	9.6	243
Discharge Grille - Width	E	16.3	414	21.8	554	27.3	693	38.3	973	43.8	1113	54.8	1392	65.8	1671
Return Air Opening - Width	F	16.2	411	21.7	551	27.2	691	38.2	970	43.7	1110	54.7	1389	65.7	1669
Floor to Bottom Mtg Hole	K	5	127	5	127	5	127	5	127	5	127	5	127	5	127
Water Supply	BB	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424	16.7	424
	GG	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198	7.8	198
Water Return	DD	21	533	21	533	21	533	21	533	21	533	21	533	21	533
	EE	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28	1.1	28
Fresh Air Damper Width	J	10	254	10	254	16	406	16	406	32	813	32	813	32	813

Decorative Wall Plate Dimensions

Figure 17: Wall plate dimensions and kit part numbers

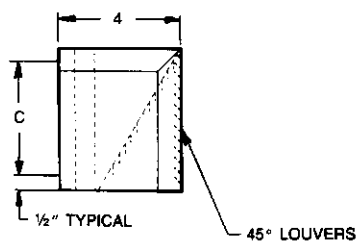
Unit Size	Inches (mm)		Kit Part Number	
	Wall Plate	Recommended Wall Opening	Front Discharge	Top Discharge
02	37.25 × 28.81 (946 × 732)	34 × 26 (864 × 660)	668114901	668114908
03	42.75 × 28.81 (1086 × 732)	40 × 26 (1016 × 660)	668114902	668114909
04	48.25 × 28.81 (1226 × 732)	45 × 26 (1143 × 660)	668114903	668114910
06	59.25 × 28.81 (1505 × 732)	56 × 26 (1422 × 660)	668114904	668114911
08	64.75 × 28.81 (1645 × 732)	62 × 26 (1575 × 660)	668114905	668114912
10	75.75 × 28.81 (1924 × 732)	72 × 26 (1828 × 660)	668114906	668114913
12	86.75 × 28.81 (2203 × 732)	84 × 26 (2134 × 660)	668114907	668114914



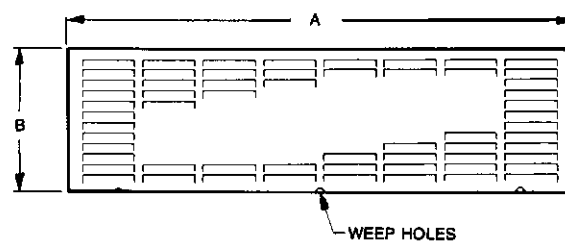
Note: Wall plate is designed for use with ThinLine vertical hideaway units mounted a minimum of 1.5 inches (38 mm) above the floor. Wall plates for Size 08, 10 and 12 units are in two sections. For installation instructions, see McQuay IM 1022.

Fresh Air Intake Box Dimensions

Figure 18: Fresh Air Intake Box Dimensions



STYLE	DIMENSIONS (INCHES)		
	A	B	C
2 BRICK x 2 BRICK	16 3/4	4 3/4	3 3/4
4 BRICK x 2 BRICK	33 1/2	4 3/4	3 3/4



ALL DIMENSIONS APPROXIMATE.
CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

McQuay ThinLine 3G™ Unit Heater

McQuay ThinLine 3G Vertical floor [wall/hideaway] type cabinet unit heaters shall be furnished in a vertical blow-through configuration with a primary coil for heating only, [with a combination of a primary coil hot water and electric coil, in preheat position].

Performance

Unit capacities shall be certified under Industry Room Fan-Coil Air Conditioner Certification Program in accordance with AHRI Standard 440-97. All standard units shall be ETL listed in the United States and Canada and comply with NFPA 90A requirements.

General Construction - All Units

The units shall include a chassis, coil(s), fan wheel(s), fan casing(s), fan board and motor(s). Steel parts exposed to moisture shall be galvanized and if necessary, insulated to prevent condensation. The complete fan assembly, which includes the motor shall be easily removed for service and maintenance. A quick-disconnect motor electrical plug shall be provided. The standard chassis construction shall be 18-gauge galvanized steel. Units shall be acoustically and thermally insulated with closed-cell material.

Cabinet

The exposed panels and cabinetry shall be aesthetically designed and fabricated of heavy 18 gauge [16 gauge] steel. Surfaces shall have electrostatically applied, baked-on powder paint finish in Antique Ivory [Cupola White] [Soft Gray] [Off White] [Putty Beige]. Standard finish shall meet ASTM B117 specifications (salt spray test).

Vertical Cabinet (Flat Top) [Slope Top] Units

Discharge air grilles shall be recessed. Units are provided with a multi-directional discharge air grille [a stamped metal grille]. Painted and aesthetically designed rigid metal hinged control access doors shall be constructed to be flush with the top panel. [Units equipped with the tamperproof option shall have a key-operated locking access door and tamperproof access door screws, as well as 16 gauge front and side panels to help prevent nuisance tampering with the unit and/or its controls.]

Individual and removable side panels shall be furnished on both ends of units allow full access to valves, piping, electrical connections without the need to remove the entire front panel. The removable front panel shall allow full access to fans and motors. A 3.5" sub-base shall be provided. Sub-bases shall be of 16 gauge steel construction and have Oxford Brown/Black paint finish. The sub-base depth and width shall be identical to the unit dimensions.

Optional Hideaway (Fully Recessed) Units

Hideaway units shall be available with a duct collar for top discharge [front discharge].

An exposed, finished, decorative-finished Wall-plate Panel shall be available for hideaway units. Panels shall be available in 18 gauge steel construction [tamperproof 16 gauge steel construction]. Wall-plate panels shall be shipped separately from units.

Coils

Heating coils shall be provided with 2 [3][4] hydronic coil rows. All water coils shall be initially leak-tested at 400 psig (2760 kPa) then re-tested at 300 psig (2,069 kPa) after all final piping connections are made, including valve/piping packages. Maximum hydronic coil working pressure shall be 300 psig (2,069 kPa). Maximum entering water temperature shall be 200°F (93°C). Tubes and u-bends shall be 3/8" (10 mm) OD copper. Fins shall be aluminum and mechanically bonded to the copper tubes. Coil stub-outs shall be 5/8" (16 mm) OD copper tubing. Piping connections shall be expanded to accept standard copper tubing 5/8" (16 mm) OD. Water coil fins shall have full-drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Seamless copper tubes shall be mechanically expanded to the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer.

Water coils shall be provided with headers of seamless copper tubing with intruded tube holes to permit expansion and contraction without creating undue stress or strain. Coil casing shall be constructed of galvanized steel. Coil connections shall be copper sweat connections with connection sizes determined by the manufacturer, based upon the most efficient coil circuiting. Vent and drain connections shall be furnished soldered and installed on the hot water coil by the coil connection. Vent connections shall be located at the highest point to ensure proper venting. Drain connections shall be located at the lowest point.

Electric Heating Coils

Auxiliary electric heating coils shall be provided as the auxiliary intermediate seasonal heating when the boiler is down. The open-wire electric heat coils shall be located in the preheat position. The electric heat option shall operate at the same voltage as the unit [with a separate power supply voltage to reducing amperage consumption]. A single power connection shall be provided when the unit and electric heat are the same voltage. A second power connection must be used when the unit heater and electric heat have different voltages. All standard electric heat coils shall be ETL listed and interlocked with the fan motor switch. Electric heat operation shall be possible only when the fan is running. A unit-mounted magnetic contactor shall be supplied on all voltages. High temperature cutouts with automatic reset and one with manual reset must be provided as an integral part that de-energizes the electric heat in the event of an overheat condition.

Supply Fan

Fans shall be dynamically balanced, forward-curved, double-width centrifugal type constructed of 18 gauge galvanized steel for corrosion resistance. Fan housing construction shall be formed sheet metal.

Motor

Supply fans shall be provided with permanent split-capacitor, high efficiency, motors with 3-speed tap as minimum, permanently lubricated and run-tested in the assembled unit. All motors shall be UL and CSA listed and have integral thermal overload protection with a maximum ambient operating temperature of 104°F. Motors shall be capable of starting at 80 percent of rated voltage and operating at 90 percent of rated voltage on all speed settings. Motors should be able to operate up to 10 percent over voltage. Motor wires shall include a quick-disconnect motor plug for easy removal.

Disconnect Switch

A unit-mounted disconnect switch shall be provided on all units as a standard option.

Filter Section

Filters shall be 1 inch (25 mm) throwaway type. They shall be concealed from sight and easy to remove.

Optional Fresh Air Damper

A fresh air opening with a damper shall be available as a factory-installed [field-installed] option. Dampers shall be constructed of 18 gauge steel. Fresh air shall be sealed off with gasket material when the damper is set in the closed position. The fresh air damper assembly shall include a cleanable, fine wire mesh insect screen. The damper assembly shall be located in the unit sub-base below the unit filter, allowing fresh air to be filtered and mixed with the return air.

The manual damper shall be field-adjustable to allow zero to 25% fresh air. [The manual fresh air damper can also be provided with an automatic, two-position spring return actuator.]

Optional Controls

All McQuay Vertical ThinLine 3G unit heater units shall be available with no controls [with unit-mounted] [wall-mounted] thermostats and controls.

Unit-Mounted Control Options

- Unit-mounted, dial-type thermostat, integrated with a 4-position, 3-speed fan switch and a manual or automatic system changeover switch. The manual changeover switch shall allow users to change from Heat-to-Off-to-Cool as needed or, with On-Off only, for auto-changeover from

Cool-to-Heat and vice versa. The fan(s) shall run continuously at the manually selected fan speed (High, Medium or Low).

- Digital display, microprocessor-based, thermostat-controller that supplies 24VAC output control to valves and motorized dampers (when available). The use of an advanced proportional integral (PI) algorithm shall allow precise control of zone comfort under varying operational and environmental conditions. It shall allow the fan(s) to run continuously at the manually selected fan speed (High, Medium or Low) and cycle the cooling or heating valve(s) On and Off as required to meet the thermostat set point temperature. Manual [automatic] changeover options shall be available [remote setback capability from a time clock or facility management system]. Features shall include a Fahrenheit or Celsius digital display and a built-in purge cycle which assists the controller to determine if the 2-pipe hydronic system is supplying hot water or chilled water. Digital display thermostats shall be available to be used with On-Off [3-wire floating] [0-10 Vdc] [4-20mA proportional] actuator valves.
- Unit-mounted Low Voltage Interface Board to be used with remote thermostats, controllers or facility management systems.

Wall (remote) Mounted Thermostat Options

To facilitate wall-mounted (remote) installations, all vertical units shall be provided with a low voltage interface board to accommodate a low voltage thermostat to control the unit. The interface board / j-box shall have three 24-volt relays, single-point power entry, terminal connection and transformer to control fan motor(s), 24 volt actuators, valves and shall allow the integration the following additional optional inputs when required: return air sensor, pipe/temperature sensor and condenser overflow switch.

Optional Remote Mounted Controls and Switches

4P-3SP: manual switch, 4 position–3-speed Rotary Fan Switch. The vertical-mounted, manual rotary 4 position–3-speed fan switch is a simple OFF-HI-MED-LO fan controller which allows fan mode selection. This switch shall be directly connected to the fan motor and operate with line voltage.

MTE155: 3-Speed Fan Switch with Manual On/Off switch vertical-mounted, with manual On/Off system switch and manual 3-speed fan switch; a simple HI-MED-LO fan control allows fan mode selection. This switch shall be directly connected to the fan motor to operate with line voltage or to be used with the low voltage interface board and j-box.

MTA155 and MTB155: thermostats with solid state accuracy shall provide On/Off control of unit heaters with low-voltage or any line voltage valves, relays and fan motors.

Engineering Guide Specification

MTA170 and MTB170: microprocessor digital display thermostat shall be a stand-alone digital controller to supply relay control of heating, outside air, and up to three fan speeds. The thermostat configuration shall supply standard (continuous or cycling fan operation), [staged fan] and unit heater operation. Energy saving features shall include temperature range limit adjustment, staged fan operation, occupancy detection, and setback control.

MTA170 fan speed is determined by manual selection of HI-MED-LO. On MTB170 the fan speed shall be configured for staged fan operation and auto-ramp up/down speed control.

MT 158 and MT 168: digital display microprocessor-based thermostat-controller to supply low-voltage output control to valves and motorized dampers (when required). The use of an advanced proportional integral (PI) algorithm shall allow precise control of zone comfort under varying operational and environmental conditions. The digital display, with easy-to-use adjustment buttons, shall allow convenient access to current zone temperatures, set point temperatures and operating modes. Optional manual or automatic changeover setback capability from a time clock or facility management system and auxiliary heat functions shall be available on selected models to adapt to the different application requirements. Digital display thermostats shall be available to be used with On-Off, 3-wire floating [0-10 Vdc] [4-20mA proportional] actuator valves and either Normally-Open or Normally-Closed valves.

MTA and MTB 158: thermostats shall be designed to control On-Off, Normally-Open or Normally-Closed valves, relays and 3-wire floating valves. Through dip switches, the thermostat shall be configured to work with low voltage On-Off (MTA 158) or 3-wire floating valves (MTB 158).

MT168: thermostats shall be designed to control 0-10 Vdc/4-0 mA valves. These units shall include a fan switch with one or more fan speed selections. The thermostat shall be shipped with all dip switches in the "ON" (closed) position.

Optional Valve/Piping Packages

All piping packages shall be initially tested at 400 psig (2760 kPa) then re-tested once integrated in the cabinet and soldered to the coil at 300 psig (2,069 kPa) The maximum working pressure of the interconnecting piping shall be 300 psig (2,069 kPa). Hydronic unit heater units shall be provided with factory-installed valve/piping packages, available for the main cooling (heating) coil and [the pre-heat (re-heat) coil] [available as a field-install kit].

Left- [right-] hand coil connections shall be available. The interconnecting piping shall be 1/2" nominal (5/8" OD) copper pipe.

Valve/Piping Packages - Placement and Configurations

Valve packages shall be supplied with the following configurations:

- *Shut-Off Ball Valves*: memory stop on the supply and a shut-off ball valve on the return.
- *Shut-Off Ball Valves with Strainer*: memory stop on the supply and with strainer on the return.
- *Basic*: 2-way [3-way] control valve [3-way valve with bypass balancing restrictor] and shut off ball valve on the supply, and shut off ball valve on the return.
- *Enhanced*: 2-way [3-way] control valve [3-way valve with bypass balancing restrictor] and shut off ball valve with memory stop and strainer on the supply, and shut off ball valve with memory stop on the return.
- *Premium*: 2-way [3-way] control valve [3-way valve with bypass balancing restrictor] and shut off ball valve and manual circuit setter [flow control] and shut off ball valve on the return.
- *Deluxe*: 2-way [3-way] control valve [3-way valve with bypass balancing restrictor], and shut off ball valve and strainer on the supply and [manual circuit setter] auto-fixed flow control and shut off ball valve on the return.

The valve/piping combinations packages above shall include the following additional options:

- Unions on both supply and return
- [P/T ports on both supply and return]
- [Strainer with clean-out draining valve]
- [Auto-bleed air vents]
- [Threaded connection at the supply and return connection to allow stainless steel flexible hose connections]
- 12" [18"] stainless steel braided hoses.

Optional Control valves

- *Two-Way, Two-Position (On-Off) Control Valves* shall be rated for a close-off pressure of 38 psig. The valve actuator shall be easy to remove for service or replacement without the need to detach the valve body from piping packages. Normally-Closed [Normally-Open] valve and fail-safe valves shall be provided.
- *Three-Way, Two-Position (On-Off) Control Valves* shall allow full water flow through the coil or divert the flow through a bypass line. Normally-Close or Normally-Open three-way, two-position valves shall be rated for a maximum 38 psig (261 kPa) close off pressure across the valves. All standard three-way valves shall come with a fixed-balance orifice in the bypass line to compensate for flow balancing in the bypass position, eliminating the need for an additional balancing valve. [Valves are also available with a maximum close-off pressure of 50 psig (345 kPa).] The valve actuator shall be easy to remove for service without detaching the

valve body from the piping. The actuator shall respond to a line voltage (115) (208-230) (265-277 VAC) (24) VAC signal from the thermostat or controller. Normally-Open [Normally-Closed] valves shall be available.

- *Two-Way and Three-Way Modulating Control Valves* shall be rated for a maximum close off pressure of 50 psig (345 kPa). 2- or 3-way modulating valves shall modulate the water flow through the coil in response to a signal from the thermostat or controller. The 3-wire floating (0-10 Vdc proportional) modulating valves shall be factory-mounted in the supply water pipe upstream of the coil.

Other Available Options

Optional Tamperproof Locks

Key-operated locking access doors and/or panels shall be provided to help prevent nuisance tampering with units and/or controls.

Multi-Directional Discharge Grille

Multi-directional grilles shall be square and allow four different discharge directions by rotating the grilles 90°. Multi-directional grilles shall be supplied in Oxford Brown [Cupola White] with a 16° angle on the discharge louvers and recessed into the discharge panel to prevent condensation from forming on the grille exterior.

Stamped Grille Inlet / Outlet

Stamped grilles shall be supplied on the discharge and return air openings on cabinets. The grilles shall be painted with an Oxford Brown finish with 18 gauge steel construction. The louvers shall be formed at a 16° angle, and the discharge grilles are recessed into the discharge panel to prevent condensation from forming on the grille exterior.

Leveling Feet

Screw-in bolts and a mounting assembly shall be used to level the unit. Positive leveling shall be achieved with the zero to 1" adjustment capability.

Optional Rear Cabinet Extension

Cabinet extensions shall be provided to increase the depth of the vertical flat-top [slope-top] units. Extensions shall be 18 gauge steel construction and have the same paint finish as the unit. Depths shall be in 4" height and width, identical to the unit dimensions.

Optional Fresh Air Aluminum Wall Boxes

An aluminum wall box with two sets of louvers shall be provided for field installation. Placed on the outside wall of the building for decorative purposes, it shall act as a rain shield to minimize water coming into the unit. A field-supplied duct or sleeve from the wall box to the unit fresh air opening is required.

Optional Extended End Pockets for Valve/Piping Package

Over-extended end pockets shall be provided to cover built-in exposed piping or to meet specific retrofit requirements.

McQuay Training and Development

Now that you have made an investment in modern, efficient McQuay equipment, its care should be a high priority. For training information on all McQuay HVAC products, please visit us at www.mcquay.com and click on training, or call 540-248-9646 and ask for the Training Department.

Warranty

All McQuay equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local McQuay Representative for warranty details. Refer to Form 933-43285Y. To find your local McQuay Representative, go to www.mcquay.com.

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